

## **Carpet Choices Prior to ShadowFX: Shortcomings and Safety Issues**

Due to manufacturing constraints, the carpet industry had been offering only two anti-static carpet tile options prior to ShadowFX: computer-grade (low kV) carpet tile and conductive “ESD grade.”

Both options have significant shortcomings:

- **Computer-grade carpet.** This is designed to prevent static shocks by capping static generation at around 3500 volts. But computer-grade carpet does not offer an actual path to ground, so it cannot drain static from people who are already charged. And, since most computer parts are sensitive to charges well below 3500 volts, this low kV carpet cannot be used in electronics manufacturing or in applications where a static discharge could compromise a mission-critical operation.
- **ESD-grade carpet.** This carpet tile controls static to low levels but does it at the expense of electrical safety. Its excessively low conductivity could be a serious safety liability around operational electrical equipment. In fact, ESD-grade carpet is so conductive, it does not meet recently revised safety or grounding standards in documents like Motorola R56, ATIS-0300621, and FAA STD 019 used for flight control, E911, telecommunication, command centers, and server room applications.

### **Further Safety Caveats**

Recent changes to grounding standards like Motorola R56 and FAA STD 019e now prohibit the use of any floors that are specified with a range that could measure as low as 25,000 ohms. Since ESD carpet tile like The Conductors series are specified as measuring from 25000 –  $1.0 \times 10^8$ , these products should be recommended with caution since they no longer meet international grounding standards or industry best practices.

ESD-grade carpet has to be “over engineered” in the highly conductive range. Recycled thermoplastic backings are static generators rendered conductive by saturating them with high concentrations of conductive carbon black. Controlling conductivity in thermoplastics is a delicate balance between too conductive and not conductive enough.

The upshot? The liability associated with safety risks to people in environments with electricity and highly conductive flooring prevents many designers from even considering the use of ESD-grade carpet in schools, labs, call centers, networked offices, public spaces, and server rooms.